

REMARKS

Claims 1, 3-10, 12-17, 19-20, 34, 39, 41, and 43-44 were presented for examination in the present application. The instant amendment adds new claims 45-48. Thus, claims 1, 3-10, 12-17, 19-20, 34, 39, 41, and 43-48 are pending upon entry of the instant amendment. Claims 1 and 45 are independent.

The present Office Action indicates that the status of the present application in the Summary as both "final" and "non-final". The present Office Action is a first action after a Request for Continued Examination, cites a new ground of rejection, does not finally reject any claim in the body of the Office Action, and the PAIR system lists the present application as having a non-final action mailed. Thus, Applicants assert that the present Office Action is a non-final action and has responded as such.

Independent claim 1, as well as dependent claims 3-7, 9-10, 12-17, and 41 were rejected under 35 U.S.C. §103(a) over U.S. Patent No. 4,374,391 to Camlibel et al. (Camlibel) in view of U.S. Patent No. 4,001,049 to Baglin (Baglin) and U.S. Patent No. 4,855,026 to Sioshansi (Sioshansi). Dependent claim 8 was rejected under 35 U.S.C. §103(a) over the proposed combination of Camlibel, Baglin, and Sioshansi in further view of U.S. Patent No. 4,889,960 to Butt (Butt). Dependent claims 19-20, 34, and 39 were rejected under 35 U.S.C. §103(a) over the proposed combination of Camlibel, Baglin, and Sioshansi in further view of U.S. Publication No. 2002/0019069 to Wada et al. (Wada). Dependent claims 43 and 44 were rejected under 35 U.S.C. §103(a) over the proposed combination of Camlibel, Baglin, and Sioshansi in further view of U.S. Patent No. 3,204,023 to Harmon (Harmon).

Applicants maintain that Baglina and Sioshansi are non-analogous art as to the present application.

In order to rely on a reference as a basis for rejection of an applicant's invention, the reference must either be in the field of applicant's endeavor or, if not, then be

reasonably pertinent to the particular problem with which the inventor was concerned." In re Oetiker, 977 F.2d 1443, 1446, 24 USPQ2d 1443, 1445 (Fed. Cir. 1992). See also In re Deminski, 796 F.2d 436, 230 USPQ 313 (Fed. Cir. 1986); In re Clay, 966 F.2d 656, 659, 23 USPQ2d 1058, 1060-61 (Fed. Cir. 1992) ("A reference is reasonably pertinent if, even though it may be in a different field from that of the inventor's endeavor, it is one which, because of the matter with which it deals, logically would have commended itself to an inventor's attention in considering his problem."); Wang Laboratories Inc. v. Toshiba Corp., 993 F.2d 858, 26 USPQ2d 1767 (Fed. Cir. 1993).

Applicants maintain that the Office Action has failed to establish that Baglin is reasonably pertinent to the particular problem with which the inventor was concerned.

Baglin discloses a method for improving the dielectric property of a thin SiO₂ layer by use of relatively small dosage of an ion radiation treatment followed by the annealing of the SiO₂ film at about 500°C to achieve the improved dielectric breakdown strength. See col. 2, lines 45-64. Thus, Baglin discloses densification using an ion implantation and a subsequent high temperature annealing procedure.

Further, Applicants submit that Baglin (e.g., ion implantation and subsequent high temperature annealing) is clearly not reasonably pertinent to the particular problem with which the inventor was concerned, namely hermetically encapsulating electronic modules with low temperatures.

Moreover, Applicants submit that the "glassy" materials of Baglin are not reasonably pertinent to the glass layer as claimed. While a glass layer as in the present invention can contain SiO₂, Applicants maintain that the SiO₂ layer of Baglin is not a glass layer.

Therefore, Applicants submit that Baglin is non-analogous prior art to the present application.

Moreover, Applicants maintain that the Office Action has failed to establish that Sioshansi is analogous is either in the field of applicant's endeavor or reasonably pertinent to the particular problem with which the inventor was concerned. Rather, the Office Action has merely linked Sioshansi as being analogous to Baglin, but has failed to establish that Sioshansi is analogous to the present application.

Applicants submit that Sioshansi (e.g., lubricious coatings for razor blades) is clearly not in the field of applicant's endeavor (e.g., glass layers that house electronic modules). Further, Applicants submit that Sioshansi (e.g., lubricious coatings for razor blades) is clearly not reasonably pertinent to the particular problem with which the inventor was concerned, namely hermetically encapsulating electronic modules with low temperatures. Therefore, Applicants submit that Sioshansi is non-analogous prior art to the present application.

In sum, Applicants submit that Baglin and Sioshansi should both be considered non-analogous art to the present application.

Nonetheless, and presuming arguendo that Baglin and Sioshansi are analogous art to the present application (which they are not), Applicants submit that the proposed combination of Camlible, even in view of Baglin and Sioshansi, fails to disclose or suggest claim 1.

Independent claim 1 recites the steps of "vapor-coating the first substrate side with a glass layer", wherein the vapor-coating step comprises: "producing an ion beam by ionizing a gas in a plasma generated by the plasma source" and "directing the ion beam onto the substrate during the vapor-coating so as to additionally densify the glass layer".

Camlible discloses a fabrication technique for making various devices in which a type of glass is used as a surface protection layer. The glass layers are put down by particle bombardment (generally sputtering) of a borosilicate glass target. Deposition of

the film may be carried out in a variety of ways all of which involves bombardment of the glass target with various kind of particles. Typical deposition procedures are sputtering and the E-beam deposition. See col. 4, lines 44 to 48.

The Office Action acknowledges that Camlible does not disclose the vapor deposition arrangement (i.e., glass source and plasma source in one arrangement), ion beam densification, or directing an ion beam during vapor coating.

Baglin is directed to methods of improving the dielectric breakdown strength of insulating-glassy-material layers. More specifically, Baglin is directed to ion radiation treatment of amorphous SiO₂ thin films, where the ion radiation treatment was found to provide a denser layer such that the layer is especially useful as a gate insulator layer in a field-effect transistor. See abstract.

However, the Office Action acknowledges that Baglin also does not disclose the vapor deposition arrangement (i.e., glass source and plasma source in one arrangement) or directing an ion beam during vapor coating.

Further, Baglin merely discloses that for the practice of its invention, that the implanting of specific ions into a film of amorphous SiO₂, in conjunction with an annealing treatment of the film, improves the dielectric breakdown strength of the film. See col. 1, lines 33-39.

Thus, Baglin requires subsequent annealing treatments, which are absent from the claimed step of "directing the ion beam onto the substrate during the vapor-coating so as to additionally densify the glass layer" recited by claim 1.

Sioshansi is directed to sputter enhanced ion implantation, most notably for improving the physical and chemical properties of the surfaces of workpieces, such as razor blades and surgical instruments. See col. 1, lines 14-19. Here, the process is particularly suitable for improving, at reduced expense, the physical and chemical

properties of workpieces designed to be exposed to excessive wear, erosion, corrosion and fatigue and workpieces benefitting from exhibiting a lower coefficient of friction at their surfaces. Some of such workpieces include ball bearings, industrial gears and toolings, and orthopaedic surgical implants and the like. See col. 2, lines 60-68. Thus, Sioshani relates essentially to the deposition of metallic hard coatings on workpieces such as ball bearings, industrial gears and toolings, and orthopaedic surgical implants.

However, Applicants submit that Sioshani fails to disclose or suggest that its sputter enhanced ion implantation is useable with the glass layers as claimed or with vapor-deposition glass sources as claimed.

Moreover, Applicants submit that Sioshani fails to disclose or suggest that its sputter enhanced ion implantation is useable to form a housing for electronic modules as claimed.

The Office Action asserts that Sioshani discloses a glass source and a plasma source provided in one arrangement with reference to FIG. 1. Applicants respectfully traverse this assertion as a mishcharacterization of Sioshani.

First, Sioshani does not show a glass source. Second, Sioshani does not show a plasma source. Rather, Applicants submit that FIG. 1 only illustrates the providing of an ion beam but does not show a glass source or a plasma source in one arrangement.

Thus, Applicants submit that the teaching of Sioshani, which merely discloses the use of sputter enhanced ion implantation to add lubricous coatings to workpieces, fails to cure the deficiencies acknowledged by the Office Action with respect to Camlible and Baglin.

The Office Action fails to assert that any of the remaining references, namely Butt, Wada, or Harmon disclose or suggest the combination recited by claim 1.

Again, Applicants maintain that Baglin and Sioshani both relate to an implanting of ions in a deposited layer. This is in strong contrast to the present invention of claim 1, which recites the step of "directing the ion beam onto the substrate during the vapor-coating so as to additionally densify the glass layer" and not to an implantation.

Accordingly, Applicants submit that the proposed combination of cited art simply fails to disclose or suggest the method recited by claim 1. Claim 1, as well as claims 3-10, 12-17, 19-20, 34, 39, and 43-44 that depend therefrom, are in condition for allowance. Reconsideration and withdrawal of the rejection to claims 1, 3-10, 12-17, 19-20, 34, 39, and 43-44 are therefore respectfully requested.

Claims 45-48 have been added to point out various aspects of the present application. Support for new claims 45-48 can be found in the present application at least in original claim 1, as well as at pages 11 and 12. No new matter is added.

Applicants specifically point out that claims 45-48 are not intended to be limited to the specific mechanisms of patentability previously argued with respect to any prior claims in this or any related applications. Accordingly, Applicants hereby rescind any disclaimer of claim scope and, thus, any prior art for which such a disclaimer was made to avoid may need to be revisited by the Examiner with respect to claims 45-46.

Claims 45-48 are in condition for allowance. For example, claim 45 recites, in part, the step of "generating vapor by generating an electron beam and impinging the electron beam onto a glass target of the vapor-deposition glass source to vapor-coat the first side with a glass layer, and, during the vapor-coating of the glass layer, ionizing a gas in a plasma generated by the plasma source to produce an ion beam and directing the ion beam onto the semiconductor substrate so as to additionally densify the glass layer as the glass layer is deposited (emphasis added)".

Applicants submit that the cited art fails to disclose or suggest the claimed step of densifying a glass layer as that glass layer is being vapor-deposited. Thus, claim 45, as well as claims 46-48 that depend therefrom, are in condition for allowance.

Claim 46 recites the step of selecting the glass target so that the glass layer comprises a mixed layer of inorganic and organic constituents. Applicants submit that the cited art fails to disclose or suggest selecting the glass target to provide the glass layer of a mixed layer of inorganic and organic constituents as claimed. Thus, claim 46 is in condition for allowance.

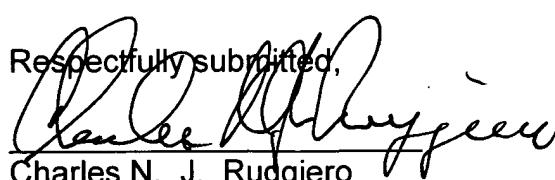
Claim 47 recites the step of maintaining the temperature below 300°C during the vapor-coating of the glass layer, while claim 48 recites the step of maintaining the temperature below 150°C during the vapor-coating of the glass layer. Applicants submit that the cited art fails to disclose or suggest the temperatures as claimed. Thus, claims 47 and 48 are each in condition for allowance.

In view of the above, it is respectfully submitted that the present application is in condition for allowance. Such action is solicited.

If for any reason the Examiner feels that consultation with Applicants' attorney would be helpful in the advancement of the prosecution, the Examiner is invited to call the telephone number below.

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Respectfully submitted,


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